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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

TAMAI, KARL I

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 10/21/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/876,203

Applicant(s)

GRADE ET AL.

Examiner

Tamai IE Karl

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 June 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5&6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Specification***

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification. The specification does not include the serial number of the copending application, on page 16. The inclusion of the serial number constitutes new matter and therefore cannot be incorporated by reference, as suggested on line 25.

### ***Drawings***

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the electromagnetic actuator of claim 6, the electromagnetic and electrostatic actuator of claim 7, must be shown or the features canceled from the claims. No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 101***

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 6-12 are rejected under 35 U.S.C. 101 because the disclosed invention is inoperative and therefore lacks utility. The disclosed device will not operate as an electromagnetic device.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 6-12 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Claims 6-12 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification does not contain an enabling or a full, clear, concise, and exact written description of an electromagnetic device. The specification only provides a description of an electrostatic actuator, which is not a magnetic device. For the purposes of advancing prosecution on the merits the examiner will assume that the applicant is claiming an electromechanical device, which an electrostatic device is a type of electromechanical device.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-4, 6, 7, 13, 16, and 19 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Matsumoto (US 5,477,097). Matsumoto teaches a microactuator with a dielectric damping fluid/oil. It is inherent that the mover can move at a resonance frequency. The dielectric fluid inherently having a greater viscosity than air. Matsumoto teaches an electrostatic, electromechanical device. Matsumoto teaches a mover with a flag vertical surface which will inherently act as a drag member.

9. Claims 1-3, 6, 7, 8, 11-13, 16, 17, and 19 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Cho et al. ("Viscous Energy Dissipation in Laterally Oscillating Planar Microstructures: a Theoretical and Experimental Study). Cho teaches an comb-electrostatic actuator formed on a substrate with a viscous liquid fluid between the electrodes.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto (US 5,477,097). Matsumoto teaches every aspect of the invention except the fluid being a super critical fluid. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the actuator of Matsumoto with the fluid being a super critical fluid because it has been held that mere selection of a known material on the basis of suitability for the intended use is within the ordinary skill in the art. (see *In re Leshin*, 125 USPQ 416).

12. Claims 8-12, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto (US 5,477,097) and Jerman et al. (US 5,998,906). Matsumoto teaches every aspect of the invention except comb actuator and fin. Jerman teaches a comb actuator where the electrodes act as drag fins. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the actuator of Matsumoto the electrodes of Jerman to provide an electrostatic actuator with stable rotation even at low speeds, to drive and optical switch.

13. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto (US 5,477,097). Matsumoto teaches every aspect of the invention except the Q factor of the actuator. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the actuator of Matsumoto with Q

factor between .3 to 20 or .5 to 3 to optimize the performance of the actuator in various fluids. (see *In re Aller*, 105 USPQ 233; holding where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

14. Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cho and Matsumoto (US 5,477,097). Cho teaches every aspect of the invention except the fluid being a dielectric. Matsumoto teaches the damping fluid being dielectric. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the actuator of Cho with the fluid being a dielectric because Matsumoto teaches the dielectric oil is a preferred damper fluid in electrostatic actuators.


15. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cho. Cho teaches every aspect of the invention except the fluid being a super critical fluid. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the actuator of Cho with the fluid being a super critical fluid because it has been held that mere selection of a known material on the basis of suitability for the intended use is within the ordinary skill in the art. (see *In re Leshin*, 125 USPQ 416).

16. Claims 9 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cho and Jerman et al. (US 5,998,906). Cho teaches every aspect of the invention except comb actuator moving from an interdigital to non-interdigital position. Jerman teaches a comb actuator moving from an interdigital to non-interdigital position. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the actuator of Cho the electrodes of Jerman to provide an electrostatic actuator with stable rotation even at low speeds, to drive and optical switch.

17. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cho. Cho teaches every aspect of the invention except the Q factor of the actuator. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the actuator of Cho with Q factor between .3 to 20 or .5 to 3 to optimize the performance of the actuator in various fluids. (see *In re Aller*, 105 USPQ 233; holding where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl I.E. Tamai at (703) 305-7066. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Nestor Ramirez, can be reached at (703) 308-1371. Any inquiry of a general nature should be directed to the Group receptionist at (703) 308-0956.

Karl I Tamai  
PRIMARY PATENT EXAMINER  
October 16, 2002

  
KARL TAMAI  
PRIMARY EXAMINER